

What is claimed is:

1. A method of managing maintenance activities for at least one item of equipment, the method comprising:

determining configuration maintenance requirements for maintaining a target configuration of an item of equipment;

determining predictive maintenance requirements for the item of equipment based on at least one of a longevity estimate, a probability of failure, and a financial analysis; and

planning for the availability of at least one of resources and a component for performing maintenance consistent with the configuration maintenance requirements and the predictive maintenance requirements.

2. The method according to claim 1 further comprising establishing a universal representation of components to facilitate at least one of acquisition of components from multiple sources, interchangeability of components, and tracking of component utilization.

3. The method according to claim 1 wherein the determining configuration maintenance requirements comprises:

establishing the target configuration of the item of equipment based on a design objective of the item of equipment, wherein the design objective includes at least one of safety, reliability, and performance; evaluating an actual configuration of the item of equipment; and

determining if the actual configuration complies with the target configuration.

4. The method according to claim 3 wherein the planning comprises: planning an upgrade requirement for upgrading the actual configuration to the target configuration if the actual configuration is noncompliant.

5. The method according to claim 1 wherein the determining predictive maintenance requirements comprises:

tracking performance data on at least one of a particular component and the item of equipment; and

predicting at least one required maintenance activity based upon the performance data with respect to a defined performance standard.

6. The method according to claim 5 wherein the planning comprises: scheduling performance of the required maintenance activity at a defined respective time based upon the predicting.

7. The method according to claim 1 wherein the planning comprises planning for the acquisition of at least one of the resources and the component consistent with the configuration maintenance requirements and the predictive maintenance requirements.

8. The method according to claim 1 wherein the planning comprises planning for the delivery of at least one of the resources and the component for a time interval at a common geographic location.

9. The method according to claim 1 wherein the determining the maintenance requirement comprises estimating a longevity of a component based on a historical longevity of at least one of the component and an analogous component.

10. The method according to claim 1 wherein the determining the maintenance requirement comprises estimating a probability of failure of a component based on a historical probability of failure of at least one of the component and an analogous component.

11. The method according to claim 1 wherein the determining the maintenance requirement comprises estimating a financial impact of a component based on a historical impact of at least one of the component and an analogous component.

12. The method according to claim 1 wherein the planning step includes obtaining the component for the target configuration and scheduling human resources consistent with availability of the component.

13. The method according to claim 1 further comprising updating the target configuration based on engineering change.

14. The method according to claim 1 further comprising updating the target configuration to facilitate compliance with a regulatory requirement.

15. The method according to claim 1 wherein the planning step includes scheduling and bringing together at least two of the following resources at a specific time

and place: a requisite component, technical instructions, supporting equipment, acceptance criteria and procedures, tools, and repair personnel.

16. The method according to claim 1 further comprising establishing a universal nomenclature definition applicable to at least one of a component, an item of equipment, a system, and an assembly of components to support the exchange of data associated with the universal nomenclature definition.

17. The method according to claim 1 further comprising querying a database containing components associated with corresponding universal nomenclature descriptors.

18. The method according to claim 1 further comprising the step of estimating a remaining life span of a component by determining a usage time span between an installation date of the component and a subsequent date, and deducting the usage time span from the longevity for the corresponding component.

19. A system of managing maintenance activities for at least one item of equipment, the system comprising:

a configuration monitor for determining configuration maintenance requirements for maintaining a target configuration of an item of equipment;

a predictive maintenance controller for determining predictive maintenance requirements for the item of equipment based on at least one of a longevity estimate, a probability of failure, and a financial analysis; and

a resource planner for planning for the availability of at least one of resources and a component for performing maintenance consistent with the configuration maintenance requirements and the predictive maintenance requirements.

20. The system according to claim 19 further comprising: a universal nomenclature manager for establishing a universal representation of components to facilitate at least one of acquisition of components from multiple sources, interchangeability of components, and tracking of component utilization.

21. The system according to claim 19 wherein the configuration monitor establishes the target configuration of the item of equipment and determines whether an actual configuration complies with the target configuration; the target configuration being based on at least one of safety, reliability, and performance.

22. The system according to claim 21 wherein resource planner is arranged to plan an upgrade requirement for upgrading the actual configuration to the target configuration if the actual configuration is noncompliant.

23. The system according to claim 19 wherein the predictive maintenance controller tracks performance data on at least one of a particular component and the item of equipment and predicts at least one required maintenance activity based upon the performance data with respect to a defined performance standard.

24. The system according to claim 23 wherein the resource planner schedules performance of the required maintenance activity at a defined time to maximize availability of the item of equipment.

25. The system according to claim 19 wherein the resource planner plans for the acquisition of at least one of the resources and the component consistent with the configuration maintenance requirements and the predictive maintenance requirements.

26. The system according to claim 19 wherein the resource planner comprises planning for the delivery of at least one of the resources and the component for a time interval at a common geographic location.

27. The system according to claim 19 wherein the longevity estimate of a component is based on a historical longevity of at least one of the component and an analogous component.

28. The system according to claim 19 wherein the probability of failure of a component is based on a historical probability of failure of at least one of the component and an analogous component.

29. The system according to claim 19 wherein the financial impact of a component is based on a historical impact of at least one of the component and an analogous component.

30. The system according to claim 19 further comprising: a purchasing system for obtaining the component for the target configuration; and a personnel management system for scheduling human resources consistent with availability of the component.

31. The system according to claim 19 wherein the target configuration complies with an engineering standard.

32. The system according to claim 1 wherein the target configuration complies with a regulatory requirement.

33. The system according to claim 19 further comprising a resource planner for scheduling and bringing together at least two of the following resources at a specific time and place: a requisite component, technical instructions, supporting equipment, acceptance criteria and procedures, tools, and repair personnel.

34. The system according to claim 19 further comprising a universal nomenclature manager for establishing a universal nomenclature definition applicable to at least one of a component, an item of equipment, a system, and an assembly of components to support the exchange of data associated with the universal nomenclature definition.

35. The system according to claim 19 further comprising a universal nomenclature manager for querying a database containing components associated with corresponding universal nomenclature descriptors.